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ABSTRACT

The compositions of sixth, tenth, and twelfth grade students were used to determine whether narrations or arguments of high syntactic complexity were rated higher than narrations or arguments of low syntactic complexity. Selection of the compositions was made in pairs--one of high syntactic complexity and one of low syntactic complexity--each written by the same student. The compositions at each grade level were rated by four teachers who taught at that grade level. The holistic score, the composition quality scale, and the sentence structure score were used as the measures of quality. Analyses indicated that arguments of high syntactic complexity rated significantly higher than did arguments of low syntactic complexity for grades ten and twelve; there was no significant difference at grade six. Narrations of high syntactic complexity did not rate higher than narrations of low syntactic complexity at any grade level. In fact, twelfth grade students' narrations of low syntactic complexity rated significantly higher than did their narrations of high syntactic complexity. Overall, it appears that syntactic complexity influenced ratings of arguments but not of narrations. (Author/RL)

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THE EFFECT OF SYNTACTIC COMPLEXITY ON TEACHERS' QUALITY RATINGS OF NARRATIONS AND ARGUMENTS

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THE EFFECT OF SYNTACTIC COMPLEXITY ON TEACHERS' QUALITY RATINGS OF NARRATIONS AND ARGUMENTS

A number of attempts have been made to explore the relationship between syntactic complexity and the quality ratings assigned to compositions. Results have been conflicting. Both Potter (1967) and Veal (1974) found that measures of syntactic complexity distinguished between writing judged high and low quality in tenth grade and in second, fourth and sixth grades respectively. O'Hare (1973), Combs (1976) and Morenberg, Daiker and Kerek (1978) found that, after sentence-combining practice, their experimental subjects had both higher syntactic complexity scores and higher quality scores than their control subjects. However, Mellon (1969) found that, while syntactic complexity increased after sentence combining practice, quality ratings for his experimental group were lower than for the less syntactically complex writing of his control group. Schmeling (1969) found that "good" compositions by college freshmen had an average mean T-unit length that was only slightly greater than "poor" compositions while the average group had a mean T-unit length greater than either the good or the poor group. Gebhard (1978) compared the top 10% and the bottom 10% of papers written by college freshmen and found that clause length was significantly greater in the superior group though mean T-unit length was not. Nold and Freedman (1977) found that words per T-unit and other standard measures of syntactic development were not useful in predicting quality scores at the college level. Stewart and Grobe (in press) found significant positive correlations at

the Grade 5 level between quality ratings and the three common syntactic-development measures (words per T-unit, words per clause and clauses per T-unit); they found no significant correlation between quality and syntactic-development measures at Grades 8 and 11.

Purpose of the Study

The purpose of the present study was to examine the relationship between syntactic complexity and the quality ratings assigned to compositions in two different modes of discourse (narration and argument) at three grade levels (6, 10 and 12). A number of studies have found that syntactic complexity is greater in argumentative writing than in narration (Crowhurst and Piche, 1979; Crowhurst, in press; Perron, 1977; San Jose, 1972). Crowhurst et al. found that T-unit length was significantly greater in argument than in narration at both Grades 6 and 10, and also that T-unit length did not increase significantly between Grades 6 and 10 in the mode of narration.

They suggest that presenting an argument inherently requires the interrelationship of propositions and that this is expressed syntactically by the subordination of clauses and less-than-clausal elements. They conclude that argument places greater demands on writers to make use of their syntactic resources than does narration. If the conclusion is valid, it may be the case that the effectiveness of a piece of persuasive writing depends partially on the effective deployment of syntactic resources which is reflected in high syntactic complexity scores. If so, raters may tend to assign higher quality ratings to arguments of high syntactic complexity than to arguments of low syntactic complexity. If, on the other hand, effective narrative writing is less dependent on complex-

ity of syntax, syntactic complexity scores would seem to be less likely to influence quality ratings of narrations.

The present study differs from previous studies of the relationship between syntactic complexity and quality in three ways. In the first place, it examines that relationship in two different modes of discourse. Secondly, the writer variable is controlled by the use of pairs of compositions by the same writer, one composition of high syntactic complexity and one of low complexity. Thirdly, syntactic complexity is the independent variable and quality the dependent variable.

The following predictions were made for each of three grade levels (i.e., 6, 10 and 12):

1. Arguments of high syntactic complexity will receive higher quality ratings than arguments of low syntactic complexity written by the same students.

2. Narrations of high syntactic complexity will not receive higher quality ratings than narrations of low syntactic complexity written by the same students.

Method

Subjects

Subjects were from two high schools and four elementary schools in Brandon, Manitoba, a city of approximately 40,000. Students in ten twelfth-grade classes (N = 206), eleven tenth-grade classes (N = 228), and eight sixth-grade classes (N = 223) were randomly assigned to write in either the mode of narration or the mode of argument so that there was approximately the same number of students writing in each mode in each classroom. Students wrote three times in the assigned mode.

Administering the Writing Assignments

Three 35 mm color slides were used to elicit writing samples, each picture representing one topic. Subjects in the mode of narration were instructed to write an exciting story of about one page about the picture. Subjects in argument were asked to write a persuasive piece of about one page related to the picture. [For specific argument assignments, see Crowhurst et al., (1979).]

Packages of assignment booklets for each class were prepared in advance for each of the three writing sessions. Each booklet consisted of a printed assignment sheet, complete with subject's name, stapled to a legal-sized sheet of paper lined on both sides. Assignments were administered by the classroom teacher who projected the appropriate slide, distributed the assignment booklets, and issued brief, standardized instructions in each writing session. Students wrote once a week for three weeks in their assigned mode, once on each of the three topics. Each writing session lasted 40 minutes. The order of topics was randomly assigned to classes.

Selection of Compositions for Quality Scoring

All compositions were scored for syntactic complexity using the score mean T-unit length since this appears to be "the most useful and useable index of syntactic development over a wide age-range" (O'Donnell, 1976, p. 38). Mean T-unit lengths and standard deviations for each of the two modes of discourse at each of the three grade levels were as follows:

Grade 6: narration: $\bar{X}$ = 10.60, sd = 1.97; argument: $\bar{X}$ = 13.79, sd = 3.10

Grade 10: narration: $\bar{X}$ = 12.48, sd = 2.29; argument: $\bar{X}$ = 15.17, sd = 2.37

Grade 12: narration: $\bar{X}$ = 12.51, sd = 1.78; argument: $\bar{X}$ = 16.06; sd = 2.45.

A composition was designated as being of high syntactic complexity if mean T-unit length for that composition was .5 or more words higher than the mean of all compositions in the same grade and mode. Thus, for example, Grade 6 narrations were of high syntactic complexity if mean T-unit length was 11.10 or more. Similarly, compositions were designated as being of low syntactic complexity if mean T-unit length for that composition was .5 or more words lower than the mean of all compositions in the same grade and mode.

A pair of compositions written by the same student was chosen for quality rating if:

a. One composition was of low syntactic complexity and one of high syntactic complexity.

b. The difference in mean T-unit length between the two compositions was at least two words. (Thus, a pair of narrations written by a Grade 12 student was discarded because, although one had a mean T-unit length of 11.90 and thus qualified as low complexity, and the other had a mean T-unit length of 13.06 and thus qualified as high complexity, the difference in mean T-unit length, i.e., 1.16, was less than 2.00)

c. The two compositions were of similar length. Pairs were discarded if the shorter of the two contained fewer than 70% of the number of words in the longer composition. (Since this selection procedure allowed for some difference in composition length, an ANOVA was run to determine whether the difference in composition length between complexity levels in grade by mode cells was significant. Grade 12 narrations of high complexity were significantly longer than Grade 12 narrations of low complexity. There was no significant difference on composition length between high and low complexity compositions in any other grade by mode

cell.)

Where there were two compositions of high complexity and one of low complexity by the same student (or, two of low complexity and one of high), choices were made so as to equalize, as far as possible, the number of compositions per topic in mode by complexity cells at each grade level. Table 1 shows the total number of compositions in each grade by mode by complexity cell and the number of compositions on each of the three topics in each cell. Table 2 shows the means and standard deviations for words per T-unit (W/TU) and total words per composition (# WDS) for each grade by mode by complexity cell.

[Insert Tables 1 and 2 about here]

Scoring and Scorers

Twelve experienced teachers, four for each grade level, were hired to rate the compositions. All raters for a given grade were currently teaching English at that level. Raters read both arguments and narrations. They rated on two consecutive Saturday mornings, different Saturdays for each set of raters. They rated arguments one week and narrations the other.

Compositions were typed with correction of spelling errors and gross punctuation errors such as omission of periods. Compositions at each grade level were sorted by topic into three sets. Each set contained both high and low complexity compositions on the one topic. Rating on a given morning was done in three periods, one set of compositions to a period, with refreshments and a rest time between periods. The order in which sets were rated was randomly assigned for each session of each grade level.

Each composition was assigned both a holistic score and a set of

scores on a composition quality instrument developed by Piche, Rubin, Turner and Michlin (1978). For the holistic rating, a seven-point scale was used. Raters were asked to assign a global rating of from 1 (low) to 7 (high).

The composition quality instrument consisted of seven semantic differential scales, each consisting of a pair of bipolar adjectives. The seven pairs of adjectives were: coherent, incoherent; organized, disorganized; well written, poorly written; good sentence structure; poor sentence structure; logical, illogical; grammatical, ungrammatical; good vocabulary, poor vocabulary. The seven scales together represent a general composition quality factor. Raters were asked to assign a score of from 1 to 7 for each of the seven scales, 1 representing the negative end of the scale (e.g., incoherent) and 7 representing the positive end of the scale (e.g., coherent). The investigator trained and supervised raters at all rating sessions.

Dependent Measures

Three measures of the dependent variable, quality, were selected for analysis: the holistic score (HOL), the composition-quality-scale score (COMQ), and the sentence structure score (SNTSTR). The holistic score was obtained by summing the holistic scores given by the four raters. Thus, the holistic score for a given composition could range from 28 (for the best composition) to 4 (for the worst). The composition-quality-scale score was obtained by summing the totals of the seven scores given by each of the four raters to the seven semantic differential scales. Thus the COMQ score for a given composition could range from 196 (for the best composition) to 28 (for the worst). The sentence structure score was obtained

by summing the scores given by the four raters for the sentence structure item on the composition quality scale. Thus the SNTSTR score for a given composition could range from 28 (for the best composition) to 4 (for the worst).

Rater reliability was calculated using the procedures described in Winer (1962). The reliability coefficients for the mean of the four ratings for HOL ranged from .78 for Grade 12 argument to .90 for Grade 6 narration; for COMQ the range was from .72 for Grade 12 argument to .92 for Grade 6 narration; for SNTSTR the range was from .62 for Grade 12 argument to .89 for Grade 6 narration. (See Table 3)

[Insert Table 3 about here]

Analysis

Each of the three quality measures (HOL, COMQ and SNTSTR) was analyzed by a separate ANOVA at each grade level in a 2(mode) x 2(syntactic complexity) mixed design with a repeated measure on the second factor. The ANOVAs were performed by program BMDP2V in the Biomedical Computer Program, P-series (1977). Bonferroni t statistics were used to compare high and low complexity means in each grade by mode cell for each of the four measures analyzed. Results were tested for significance at the .05 level.

Results

The omnibus null hypothesis of no significant differences between interaction cell means was irrelevant for purposes of this investigation. Results of pre-planned, nonorthogonal contrasts between high and low complexity means within each mode, at each grade level, are presented below.

Grade 6: There was no significant difference on any of the three measures between high and low syntactic complexity compositions in either

narration or argument. Cell means in mode by complexity cells are presented in Table 4.

[Insert Table 4 about here]

Grade 10: High complexity arguments scored significantly higher than low complexity arguments on all three quality measures. There was no significant difference on any of the three measures between high and low complexity narrations. Cell means in mode by complexity cells are presented in Table 4.

Grade 12: High complexity arguments scored significantly higher than low complexity arguments on SNTSTR and COMQ. On HOL, high complexity arguments scored higher than low complexity arguments but the difference between the two was not significant. In narration, low complexity compositions scored significantly higher than high complexity compositions on all three measures. Cell means in mode by complexity cells are presented in Table 4.

Discussion

The prediction concerning the relationship between syntactic complexity and quality ratings in the mode of argument was confirmed at two grade levels. At Grades 10 and 12, arguments of high syntactic complexity received higher quality scores than arguments of low syntactic complexity. When individuals engage in persuasive or argumentative discourse, they are engaging in an activity which, inherently, requires the logical interrelationship of propositions. This results in T-units which are lengthened by the subordination of clauses and less-than-clausal elements. The high quality ratings for high complexity arguments suggest that there is a positive relationship between effective argumentative discourse and the ability

to relate propositions syntactically.

There was no significant difference between the quality ratings assigned to high complexity arguments and the ratings assigned to low complexity arguments at Grade 6. Argumentative writing is difficult for Grade 6 students. When data for the present study was being collected, several Grade 6 teachers indicated that they did not usually ask their students to write in the argumentative mode. In an earlier study, Crowhurst (1977) reported problems in getting sixth-graders to write in the mode of argument. Many sixth graders have not developed facility in this mode of writing. It is possible that this was a complicating factor in the quality ratings of Grade 6 arguments.

The prediction concerning the relationship between syntactic complexity and quality ratings in the mode of narration was confirmed at all three grade levels. High complexity narrations were not judged to be qualitatively superior to low complexity narrations at any of the three grade levels studied. Indeed, at the Grade 12 level, narrations of low complexity were judged to be qualitatively superior to narrations of high complexity, and this despite the fact that high complexity narrations at Grade 12 were significantly longer than low complexity narrations. Since a positive relationship between composition length and quality ratings has frequently been noted (Diederich, 1961; Gebhard, 1978; Nold et al., 1977; Richardson, Calnan, Essen and Lambert, 1976; Stewart and Grobe, in press), it might have been expected that the longer high complexity narrations would have received higher quality ratings.

The absence of a positive relationship between high syntactic complexity and quality judgments in narrative writing supports what is intuitively

felt, namely, that effective narrative style is not greatly dependent on complexity of syntax. The finding, moreover, is consonant with observations made by Hunt (1965) and Rosen (1969). Hunt calculated mean T-unit length for two stories by Hemingway and one by Faulkner and found that scores for the Hemingway stories were 9.41 and 14.44, and for the Faulkner story, 22.62. The scores illustrate that syntactic complexity varies widely in narratives of recognized quality. Rosen had his 15/16-year-old subjects write in response to eight different sets of assignments, each set designed to elicit a different kind of writing. He discovered that the assignment set (Set 6) for which the highest mean quality score was given was a set which had elicited narrative writing and which had the lowest mean T-unit length of all assignment sets.

The results of this study indicate that syntactic complexity was not an influential factor in assigning quality ratings to narrations written by the sixth-, tenth-, and twelfth-grade subjects of this study, but that it was an influential factor in the rating of arguments written by the tenth- and twelfth-grade subjects. Arguments of high syntactic complexity were rated significantly higher than arguments of low syntactic complexity. While the results of this study should not be generalized to other raters and other composition sets, the results are suggestive. The questions here examined merit further study. It would be interesting to know how various types of arguments contribute to perceived quality, and what the relationship is between various argument types and the need to use multipropositional sentences in making the arguments.

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TABLE 1

NUMBER OF COMPOSITIONS PER TOPIC IN MODE

BY GRADE BY COMPLEXITY CELLS

GRADE	MODE	SYNTACTIC COMPLEXITY: HIGH				LOW			
		Topic				Topic			
		1	2	3	Total	1	2	3	Total
6	Narration	11	8	9	28	11	8	9	28
	Argument	9	11	6	26	8	9	9	26
10	Narration	4	6	6	16	4	6	6	16
	Argument	9	11	4	24	9	5	10	24
12	Narration	5	7	7	19	6	7	6	19
	Argument	11	11	7	29	9	12	8	29

TABLE 2

T-UNIT LENGTH AND NUMBER OF WORDS IN MODE

BY GRADE BY COMPLEXITY CELLS

GRADE	MODE	SYNTACTIC COMPLEXITY: HIGH				LOW			
		W/TU		# WDS		W/TU		# WDS	
		$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD
6	Narration	12.40	1.71	210	54	8.87	0.96	218	50
	Argument	17.89	4.08	173	64	11.55	1.52	168	57
10	Narration	14.20	0.97	219	50	10.66	0.89	224	29
	Argument	18.30	2.46	199	49	12.36	1.43	201	44
12	Narration	16.08	2.13	223	104	10.23	1.76	207	86
	Argument	21.07	5.24	202	42	14.13	1.10	195	45

TABLE 3

RATER RELIABILITY COEFFICIENTS FOR NARRATIONS AND ARGUMENTS AT THREE GRADE LEVELS ON THREE QUALITY SCORES

GRADE	MODE	QUALITY SCORE HOL	COMQ	SNTSTR
6	Narration	.90	.92	.89
	Argument	.81	.78	.73
10	Narration	.88	.84	.86
	Argument	.84	.82	.75
12	Narration	.82	.76	.80
	Argument	.78	.72	.62

TABLE 4

MEANS IN GRADE BY MODE BY COMPLEXITY CELLS

ON THREE MEASURES OF QUALITY

GRADE	COMPLEXITY LEVEL	MODE					
		NARRATION			ARGUMENT		
		HOL	SNTSTR	COMQ	HOL	SNSTR	COMQ
6	Low	17.36_a	16.68_b	121.25_c	15.04_d	15.00_e	106.11_f
	High	16.32_a	16.18_b	115.21_c	15.19_d	14.19_e	106.65_f
10	Low	15.19_g	15.69_h	113.00_i	14.75_j	13.96_l	102.00_n
	High	15.25_g	15.38_h	113.63_i	16.33_k	15.16_m	112.21_o
12	Low	16.32_p	14.31_r	112.58_t	15.48_v	13.66_w	99.97_y
	High	14.79_q	13.21_s	102.36_u	16.24_v	14.69_x	106.97_z

Cell means sharing a common subscript are not significantly different.